

ABSTRACT OF THE DISCLOSURE

Top-emitting organic light-emitting diode devices include a reflective, opaque, and conductive anode layer including a metal or metal alloy or both formed over a transparent or an opaque substrate, a plurality of hole-injecting layers including a bilayer structure having a layer including an oxide and a layer including a fluorinated carbon disposed over the reflective, opaque, and conductive anode, a plurality of organic layers formed over the plurality of hole-injecting layers and including an emissive layer having electroluminescent material and a reflective, semitransparent and conductive cathode include a metal or metal alloy or both provided over the plurality of organic layers, and the plurality of the hole-injecting layers being configured to reduce the drive voltage, and the reflectivity of the anode, the transparency of the cathode, and the thickness of the organic layers between the electrodes being selected to change the internal reflection of light.